



art news

12 November 2019

art stakeholders meeting



art 3.04 and 3.05 tentative plans

- **art 3.04 (tag today or tomorrow)**

- Minor feature improvements and bug fixes
 - Will try to implement one more bug fix today
- Breaking changes (e.g.)
 - **Drop e17 and c2 compilers** (still retain e19 and c7)
 - **Default qualifiers will imply Python 3**; to use Python 2, you will use the 'py2' qualifier.

- **art 3.05 (target end-of-year)**

- External product refresh
- Introduce updated versions of Clang and GCC
- ServiceHandle deprecation and service-configuration pruning

Some *art* 3.04 features – program options

- Configuration-pruning diagnostic message

```
The following module labels are either not assigned to any path,  
or they have been assigned to ignored path(s):  
'filter1', 'filter2'
```

- Can be suppressed by using `--report-unused=false`

```
art -c <my_config> # prints message  
art -c <my_config> --report-unused=false # no message  
mu2e -c <my_config> # no message
```

- Mu2e requested that the diagnostic for their executable be suppressed by default.

Some *art* 3.04 features – RandomNumberGenerator service

- CLHEP 2.4 supports the `MixMaxRng` engine as its default engine.
- *art*'s default engine for the `RandomNumberGenerator` service is `HepJamesRandom`
- Experiments have requested the ability to exercise `MixMaxRng` as a default engine
- A configuration parameter has been added to the service that allows the user to specify the default random-number engine.

Some *art* 3.04 features – RandomNumberGenerator service

- CLHEP 2
- *art*'s default engine
- HepJamesRandom
- Experimental
- A configuration file to specify the

Allowed configuration

```
## Any parameters prefaced with '#' are optional.
```

```
RandomNumberGenerator: {
```

```
    ## The 'defaultEngineKind' parameter can be any of the following:
```

```
    ##
```

```
    ## 'DRand48Engine'
```

```
    ## 'DualRand'
```

```
    ## 'Hurd160Engine'
```

```
    ## 'Hurd288Engine'
```

```
    ## 'HepJamesRandom' (art default)
```

```
    ## 'MixMaxRng' (CLHEP default)
```

```
    ## 'MTwistEngine'
```

```
    ## 'RanecuEngine'
```

```
    ## 'Ranlux64Engine'
```

```
    ## 'RanluxEngine'
```

```
    ## 'RanshiEngine'
```

```
    ## 'TripleRand'
```

```
    defaultEngineKind: "HepJamesRandom" # default
```

```
...
```

default engine
the user to

Some *art* 3.04 features – `art::Assns::addMany`

- Utilities have been developed by experiments/projects for adding one-to-n or n-to-one associations (e.g. `util::CreateAssn` in LArSoft).
- The `art::Assns::addMany` overload set has been added so that these utilities can largely be removed.

```
// Assns<A, B>
template <typename Ls>
void addMany(Ls const& lefts, Ptr<right_t> const& right);

template <typename Rs>
void addMany(Ptr<left_t> const& left, Rs const& rights);

// Assns<A, B, D>
template <typename Ls, typename Ds>
void addMany(Ls const& lefts, Ptr<right_t> const& right, Ds const& data);

template <typename Rs, typename Ds>
void addMany(Ptr<left_t> const& left, Rs const& rights, Ds const& data);
```